DOCUMENT RESUME

ED 235 523 CS 504 341

AUTHOR Haskins, Jack B.
TITLE Toward a Psychobiological Theory of Motivations for Human Communication Behavior.
PUB DATE 3 May 82
NOTE 68p.; Paper presented at the Annual Meeting of the International Communication Association (Boston, MA, May 2-5, 1982).
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Behavioral Science Research; *Behavior Patterns; *Behavior Theories; *Communication (Thought Transfer); Communication Research; *Communication Skills; Negative Attitudes; Philosophy; *Psychology; Research Methodology
IDENTIFIERS *Communication Patterns; *Psychobiology; Theory Development

ABSTRACT

Noting that recent research and theory from the expanding field of psychobiology have not been integrated into the study of human communication, this paper offers a synthesis of principles from several leading psychobiological scientists as a step toward a possible unifying approach to communication philosophy, theory, and research. The paper argues that psychobiology is particularly useful for understanding the motives for message selection and other communication behaviors, and illustrates this usefulness by applying psychobiological principles to a particular research question: Why are normally rational humans attracted to negative messages of various types? The paper then discusses the possible threat to traditional humanistic, philosophical, and behavioral thinking posed by psychobiological assumptions and the limitations of psychobiology. Also provided are an inventory of psychobiological principles and some original communication hypotheses derived from them. (Author/FL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

College of Communications

THE UNIVERSITY OF TENNESSEE, KNOXVILLE, TENNESSEE 37996-0313

Graduate Studies and
Communications Research Center
(615) 974-6851

ED235523

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Toward a Psychobiological Theory of Motivations for Human Communication Behavior

Jack B. Haskins

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Jack B. Haskins

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Paper presented at International Communication Association conference, Boston, May 3, 1982. (Philosophy of Communication Division)

CS 504341

Toward a Psychobiological Theory of Motivations for Human Communication Behavior

Jack B. Haskins

Abstract

Recent research and theory from the accelerating new field of psychobiology have not been integrated into the study of human communication. A synthesis of principles from several leading psychobiological scientists is presented here toward a possible unifying new approach to communication philosophy, theory, and research.

Psychobiology is seen as particularly useful for understanding the motives for message selection and other communication behaviors. As a case in point, psychobiological principles are applied to a particular research question: Why are normally rational humans attracted to negative messages of various kinds--scandalous gossip, bad news, violent television, theatrical tragedy, horror movies, sad songs, and disaster novels, to name a few?

Also included are: discussions of the possible threat to traditional humanistic, philosophical, and even behavioral science thinking posed by psychobiological assumptions; the limitations of psychobiology; an inventory of psychobiological principles, and some original communication hypotheses derived from them by the writer.

Toward a Psychobiological Theory of Motivations for Human Communication Behavior[1]

Jack B. Haskins

This meta-research inventory of multidisciplinary propositions started simply enough some months ago as an attempt to understand a widespread but seemingly irrational bit of human behavior: Why are human beings so interested in bad news (Haskins, 1981a)? This question soon mushroomed to include all kinds of negative messages in mass media: Why the apparent popularity and increasing media output of horror movies, books on disaster and catastrophe, sad songs, scandalous gossip, theatrical tragedy, televised violence, bad news, and other manifestations of negative messages? The hypothesis of increasing negativism has now been extended to include many other kinds of communication systems (Haskins, 1981c; Haskins, 1981d). Simultaneously, the focus has narrowed to the present question regarding the human motivation for selection of particular messages which has led inexorably into psychobiological theory and research.

Other writers have predicted that psychobiology--a relatively new, rapidly accelerating, interdisciplinary field of research and theory--gives greater promise for understanding human mental processes and behavior than any other approach to date (Uttal, 1978; Restak, 1979).

Perhaps it is not too grandiose a claim, then, to propose that a psychobiological approach may help explain not only the human penchant for negative messages and motives for other message selection and attention behavior, but perhaps it might even provide a unifying new framework for general communication research and theory. This paper is a modest beginning toward a psychobiological theory of communications--

and most of us in communication research have a great deal to be modest about in approaching this highly technical and widely scattered enterprise.

Before getting into the psychobiological synthesis, however, the original theme of hypernegative communication will be briefly reviewed as a case in point for the utility of psychobiology.

Hypernegative Communication: Hypotheses and Evidence

Extensive reviews of social-behavior research literature on hypernegativism have already been compiled and will be summarized very briefly here (Haskins, 1981a; 1981b; 1981c; 1981d).

1. Hypernegativism in communication is defined as excessive emphasis--at every stage of a communication system--on messages that are critical, pessimistic, conflict-producing, tension-arousing, fear-inducing, punitive, threatening, unpleasant and, in short, overemphasizing the negative as conceived in the everyday usage of the term. A message is defined broadly here as any semantically meaningful symbolic unit--a word, a sentence, a paragraph, a picture, a newspaper headline or article, a television program or advertisement, a movie, a book, a magazine article--that a human may selectively reject or accept for attention. [2]

2. Hypernegativism can occur in any kind of communication system--interpersonal, organizational, intercultural, political, instructional, health, religious, aesthetic, to specify a few. There is strong evidence that it is now rampant in mass media, and this provides at least a suspicion that it may be growing in other systems.

3. Humans are highly interested in many different kinds of negative messages. Interest in negative messages is growing among certain kinds of people--e.g., young women.

4. The ratio of negative to positive messages has increased in recent years and may continue to increase. In addition to increasing frequency, negative messages are displayed more prominently and given other priorities.

5. Among mass communication gatekeepers--those making go/no-go decisions on message transmission in mass media--there are both conscious and non-conscious motives underlying their bias toward over selecting and overemphasizing negative messages. Media competition creates a "marketing imperative" to supply the audience's wants and needs. This is combined with a more or less realistic belief that audiences are highly interested in problems, conflict, violence, and controversy. It is only hypothesis that the pervasiveness and status of mass media messages may lead to similar decision behavior in many other systems, especially those dealing with large impersonal audiences.

6. The increasing prevalence and prominence of negative messages is having damaging effects on individuals and on many processes and institutions of the larger society. Emotional and mental health malfunctions, negative attitudes toward individuals and organizations, and anti-social behavior are only a few of the many possible consequences.

7. There is an increasing wave of concern about excessive negative communication among essayists, media critics, journalists, psychiatrists, special interest groups, futurists, economists, and scholars from many disciplines--but strangely enough, few from communication. Last but not least, the public has an increasing perception of

hypernegativism--the leading complaint against news media, by far, is "too much bad news."

8. Little or nothing is really known about the motives underlying the obvious human interest in negative messages, and the persistence of that interest in the face of subjective discomfort and verbalized perceptions of something gone awry.

It is proposed here that psychobiological research and theory can help our understanding of negative message behavior and communications behavior in general.

Interdisciplinary Meta-Research

In a recent issue of ICA News to the International Communications Association, President Everett Rogers (1981) urged the integration of communication as a cohesive field and suggested three kinds of research to achieve that goal: interdisciplinary research across various communication specialties, especially interpersonal and mass; more meta-research, the integration and synthesis of both primary research data and verbal conclusions from numerous studies into more general conclusions at the theoretical level; and cross-cultural communication research.

The present paper is an exercise in both interdisciplinary synthesis and meta-research. It involves extensive reviews of the literature from communications research, several fields of psychology, other social and behavioral sciences, and the emerging science of psychobiology, itself a widely diversified collection of several disciplines. The approach here is of the "propositional inventory" type, a synthesis of verbal conclusions and theoretical propositions, rather than a statistical analysis of combined primary data (meta-analysis).

Commenting on the problems of synthesizing results from the many disciplines comprising psychobiology, a scientist has observed that one person cannot even cover, much less understand, all the literature of psychobiology and other neurological and behavioral sciences. He concludes that the only possible summary in such a multi-disciplinary effort is the abstraction of general principles. But he added that the possibility of a little global wisdom from such a mass of intricate detail and complex design will always be the most important product of any scientific effort (Uttal, 1978).

The writer confesses at the outset to much trepidation in trying to understand, synthesize, extrapolate from and communicate some of the more technical psychobiological information from such diverse and foreign fields as neurology, physiology, neuroscience, psychonomics, psychophysiology, and neurophysiology. Nevertheless, some of the general concepts and conclusions are at least simplistically comprehensible to the non-expert generalist, and much is to be gained by skimming off those principles and propositions that might serve as new explanations and hypotheses for communications behavior. And only through such ambitious reaching beyond one's grasp can the full benefits of interdisciplinary synthesis come about. It is hoped that the benefits in the present case will outweigh the inevitable misinterpretations and simplistic extrapolations that result from straying outside one's home discipline into other highly technical fields.[2]

Psychobiological Principles and Communication Hypotheses

There is probably no disagreement with the proposition that human communication starts and ends with mental processes.

A psychologist commented recently that "studying psychological or mental processes without studying the underlying brain structures and mechanisms is no longer meaningful" (Adelman, 1979). When two former Nobel Prize laureates in Physics were asked, independently and without prior consultation, which research area would win the Nobel physics prize in the year 2000, each unhesitatingly named brain research: "The human brain, they concluded, is our ultimate intellectual challenge in the last quarter of the twentieth century" (Restak, 1979). A psychobiologist comments:

> Like evolution, which shook nineteenth century thinking to its foundations and which has not even yet been universally accepted, the problem of psychoneural equivalence [the central issue of psychobiology], far more recent and probably far more influential because it deals with each man's future rather than the species' past, may dominate human intellectual activity in the centuries to come (Uttal, 1978, p. 6).

Strangely enough, this potential force has made little or no impact on human communications research and theory, beyond isolated pieces such as the implications of brain-hemisphere research for studying nonverbal communication (Anderson, Garrison and Anderson, 1979) and a few other very specific studies relating communication to neurological function. Certainly, to this writer's knowledge, psychobiology has been

neither assimilated into existing human communications theories nor used as a basis for new communication theory.

Even the amorphous collection of various mass communication theories and models under the rubric of "uses and gratifications" research has so far largely overlooked the possible neurological foundations of its basic axiom that human needs, formed by individual and social characteristics, lead up to motives for need fulfillment. According to one critical but devoted advocate, the present unresolved state of the uses-gratifications approach is due to several factors: excessive individualism in concept and method; reliance on verbal subjective reports of mental states; the assumption that audience behavior is always actively and consciously selective, which is inconsistent with another assumption that motives for media use are determined by basic needs which may be largely non-conscious, non-selective and habitual; little attention to the substance of the messages carried by media (Windahl, 1981). A psychobiologist would agree with those criticisms but remain puzzled as to why critics have not made the logical leap that needs and motives might have neurological origins.

It seems, then, that to date the possible contribution of psychobiology toward an understanding of human communication has been unknown, overlooked or actively resisted. It is unknown to a large extent because psychobiology as a field is less than two decades old, growing in accelerative fashion with the major contributions and syntheses appearing since 1978. And overlooked, perhaps, because most of its contributions are published in a variety of highly technical disciplines--such as neurophysiology, neurobiology, neurology, physiology, biology and others--all largely outside the ken of most communications researchers. And

actively resisted, perhaps, because some basic axioms of psychobiology are contrary to and perhaps even repugnant to our centuries-old traditions of theological, philosophical and humanistic thinking, and even--to a lesser degree--to many social and behavioral sciences, including the scientific study of communications.

Psychological concepts. A neurologist has defined the new discipline as a combination of the behavioral sciences and the brain sciences, concerned with the mind's attempt to understand itself through a study of the brain (Restak, 1979). A psychologist defines it as an interdisciplinary science still evolving from experimental psychology and neurophysiology (Uttal, 1978). There is agreement in the field that psychobiology is identifiable by that label only in the last decade or so, that more has been discovered about the brain's relation to behavior in that time than in all previous time, and that research output is accelerating so fast no one can keep up with it. One of the major research methods in the field, event-related or evoked-response potentials (ERP's, computer-averaged results from instruments attached to electrodes placed on the scalp), is at an

> . . . exciting, chaotic stage when new instruments yield new discoveries almost every time they're turned on . . . the waves that accompany more complex mental acts have raised more questions than they have answered . . . the new findings really are telling us that things were always more complicated than we thought they were (Selden, 1981, p. 112).

While psychobiology is concerned with all relationships of the brain to psychological and mental functions--including perception, learning, thinking, emotions, attention, consciousness--the present paper

is concerned primarily with motivation. Motive overlaps in meaning here with the nouns of drive, need, urge, and volition. A psychological dictionary gives the primary definition as "the non-stimulus variables influencing behavior; the general name for the fact that an organism's acts are partly determined in direction and strength by its own nature and/or internal state" (English and English, 1958).[3] Motives are psychobiologically defined as determinants that impel organisms toward particular forms of consummatory behavior and to choose certain of the many possible behaviors momentarily available (Uttal, 1978). These definitions allow for the possibility of both inherent (unconditioned, genetic, biological) and acquired (learned, conditioned) motives.

According to those definitions, man's interest in negative, positive and other stimuli may be motivated by (a) either internal neurological patterns or the properties of external stimuli or the neural-external interaction, and (b) either inherent or acquired internal neural patterns--nature or nurture. That proposition does not preclude the possible influence of acculturation, nurture, or environment in channeling the particular kinds of response.

Psychologist William Uttal (1978) has provided one of the first major syntheses of the basic concepts, assumptions, philosophy and principles of the developing science of psychobiology, a few of them reported here. Neural activity is the sole basis and only significant concomitant of mental activity. The relationship between brain neural activity and mental activity is direct--i.e., psychoneural identity. Measurement of mental processes can be as quantitative and objective as other physical parameters. The brain is not a homogeneous mass, but, though there are different functions in different parts and some

processes are relatively localizable. Complex mental processes such as thinking, motivation, etc., are not narrowly localizable. The more complex mental processes are patterns of momentary electrical activity, and these patterns and interactions, rather than static neural tissue, provide the significant data. Motivational states in particular, while identifiable through consistent electric pattern measurement, have no particular spatial location. Motivation, in neurological terms, can thus be viewed literally as a dynamic process force, such as electricity or gravity, and not a metaphysical or philosophical concept.

Several theorists and their conclusions pertinent to communication will be presented here in roughly chronological order. In addition to Uttal and Restak already cited, these include Lilly, Berlyne, Campbell, Eysenck, Zuckerman, Wilson, Tiger, Matlin and Stang, Solomon and MacLean. As will be seen, they embrace a number of disciplines but in the works cited the common theme is psychobiology.

This writer has derived some original communication hypotheses from each theorist, and these are interspersed, indented to distinguish them from the psychobiologists' conclusions.

The central objective in this synthesis has been to acquire some understanding of the motives underlying man's propensity for negative messages. However, most of the conclusions can be applied to more general aspects of communications behavior. It is the universality of psychobiological principles that makes them valuable to communication and suitable for any reader to generate hypotheses to fit his own specific interests.

Lilly's instincts. John Lilly is a medical scientist with a lengthy history of research on the human brain, sensory isolation, drug

effects and dolphin-human communications. By implanting electrodes in the brains of various animals, he has found physical locations for both reward and punishment systems within the brain and has induced all sorts of emotional responses from violence to joy (Lilly, 1960). He concludes that there is a true biological or physiological need in the brain for both pleasurable and non-pleasurable stimulation. He goes further to say that too much pleasurable stimulation can be harmful and even fatal, as can excessive painful stimulation. These and some of his other propositions lead to several immediate hypotheses (H) about human communications behavior.

(H1) There is an itch in the punishment centers of the human brain that must be scratched. Seeking unpleasant experiences, violent television programs, and other negative messages are ways of satisfying that need.

(H2) Messages that combine both unpleasant, tension-producing information and pleasant, tension-reducing information may be more interesting than either type of information alone.

(H3) The desire for negative messages may be greatest when life is at its rosiest, when we are healthy, happy, safe, stable and prosperous.

(H4) There are undoubtedly great individual differences in the amount of negative stimulation needed, due to individual biological differences. Some people may seek out real, physical, on-line pain and danger; others may achieve the same effect from negative messages.

One may of course develop parallel hypotheses regarding <u>positive</u> messages and other stimuli. Throughout this paper, however, the primary

application will be to the negative phenomenon, both for the writer's own research purposes and to provide the reader with a common thread of application.

Berlyne's aesthetics. Canadian psychologist D. E. Berlyne (1971) has broken new ground in relating aesthetics to psychobiology. His basic hypothesis is that aesthetic preferences and responses begin with biological processes in the brain. He observed that Plato and many other thinkers through the ages feared that art might stir up undesirable emotions and behavior.

(H1) Interest in negative messages may represent the dark underbelly of acceptable aesthetic preferences. Either early acculturation or individual brain physiological differences may be responsible for the different strokes preferred by different folks, all the way from the most gruesome stimuli to the most pleasant.

Since aesthetic activity is found in all three thousand distinguishable human cultures, he reasons it must come from some fundamental characteristics of the human nervous system, but culture and individual experience are responsible for the particular manifestations of our urges.

(H2) Interest in negative messages may be endemic to all human cultures and thus represent some universal psychobiological need. However, one might expect that the degree of interest in negative messages would vary from culture to culture, along with the particular subject-matter preferred. Undoubtedly some messages perceived as bad in one culture will be perceived as good in another. But some things may be perceived as bad in all cultures.

Some of his propositions are directly relevant to other kinds of communication and to negative message motivation.

What experts call "good" art often stresses unpleasant and even aversive themes, as in the Romantic period when artists were preoccupied with human idiosyncrasy, the unusual, and even the bizarre and macabre.

(H3) If the production of the unpleasant art has cycled up and down over broad historical periods, the cycles may be related to real historical events. The same principle may apply to negative messages such as bad news and violence on television.

Berlyne goes a step beyond Lilly to identify three separate neurological locales in the brain that influence the hedonic effects of stimuli--a primary reward system, an aversion system that can overcome the primary reward system, then a secondary reward system that can overcome the aversion system. This makes it possible for certain stimuli to be both rewarding and punishing at the same time--e.g., bittersweet or sweet-and-sour flavors, or, on the vicarious level, tragedy in theater.

What he calls "sublime" pleasure is an electrochemical reaction produced by the idea of pain or danger without the actual experience of punishment, as in the case of theatrical tragedy, bad news, violent television, and so on.

One point is made over and over--that the interest value of a stimulus is demonstrably different from likability, pleasingness or preference for it; one can be highly interested in things that are either highly liked or highly disliked.

(H4) Interest in negative messages may arise from some biological needs for safety or warning from danger. But in a safe and stable environment, that interest may be emotionally dysfunctional.

(H5) Negative messages are probably more interesting to people who lead safe, boring, passive lives. Interest level is probably also variable in the same individual, at a peak after a period of low stimulation, and low after high stimulation.

(H6) Just as art may predispose one to respond in certain ways to reality, attention to negative messages may create a predisposition to respond more readily and appropriately to bad events. But too much of this mental rehearsal may also produce an over-reaction to innocuous events, perhaps paranoia or over-aggressive behavior that is damaging to the self or to others.

In my opinion, Berlyne's research is truly seminal for understanding mass communications and too rich to really cover here. These are just a few of the many testable communication ideas derived from his psychobiological research.

"Morbid curiosity" is intuitively appealing as a convenient common-sense term for human attraction to and interest in negative messages and other negative events. However, both conceptually and neurologically, curiosity is too narrow a concept. Berlyne defines curiosity as a state of uncertainty caused by inadequate information about some particular referent, resulting in an active search for <u>specific</u> stimuli to satisfy the particular uncertainty. Curiosity is a state of neurological over-arousal that is satisfied by arousal reduction when the missing information is found. Not all attention to negative (or any other) messages, however, is motivated by specific curiosity.

Exploratory behavior is a broader concept which makes a useful

and empirically based distinction between curiosity (specific exploration) and diversive exploration. Diversive exploration is motivated by boredom, a state of low neurological arousal or lack of stimulation. This leads to a search for general non-specific stimulation from what are called collative stimuli--those with the properties of novelty, surprise, complexity, conflict, or uncertainty.

Neurologically, then, the specific exploration for relevant messages caused by curiosity leads to arousal reduction, while the diversive exploration for "irrelevant" or other messages caused by boredom leads to arousal increase. Since the electrically-measured neurological effects of those two behaviors are different, one must concede that they are different motives in the usual use of that term.[4]

This is an important distinction that bears reiteration: both theory and evidence indicate that the low-arousal/boredom/diversive-exploration/arousal-increase sequence (hereinafter called the boredom syndrome) and the high-arousal/curiosity/specific-exploration/arousal-decrease sequence (hereinafter called the curiosity syndrome) are two neurologically different motives for attention to any message. They arise from different underlying neural states, have different neurological effects, and provide basic motives for all kinds of information seeking, not restricted to the present case.

Neurologically defined and distinct motives, such as boredom and curiosity, may or may not coincide with previous research on causal attribution, nor with overt behavioral responses to specific stimuli. In cases of disagreement between neurological-and-verbal or neurological-and-behavioral data, it is suggested that neurological justification provides the stronger evidence for reasons to be explicated later.

(H7) The apparent search for, attraction to, and interest in negative messages can be motivated either by the boredom syndrome or the curiosity syndrome, varying with individuals and situations. However, the attraction to negative messages in mass media is considered to be largely non-specific and follows the boredom syndrome sequence. This may be true also for many non-negative messages in the mass media. In certain other kinds of information-seeking behavior, however, specific curiosity is undoubtedly the leading motive (e.g., specialized magazines, intentional learning, etc.).

Campbell's pleasure-seeking. The British physiologist H. J. Campbell (1973) starts with the assertion that "every single aspect of human conduct and aspiration is firmly rooted in material events in the brain" and that our "entire behavior is directed at evoking electrical activity in the brain." Pleasure and displeasure are material physical facts, not just subjective feelings.

(H1) Negative messages can create depression by activating an increased amount of the chemical seritonin in the brain, and in quantity may be hazardous to both mental and physical health.[5]

Through direct electrical stimulation, Campbell concludes that 35 percent of the brain's volume is devoted to pleasure centers seeking continuous stimulation, while 5 percent of the brain produces displeasing effects when stimulated. The remaining 60 percent of the brain is neutral, with no feelings of either pain or pleasure. This combination of both pleasure-producing and displeasure-producing brain structure produces an attraction to both pleasant and unpleasant stimuli.

(H2) For maximum satisfaction to an average individual the best "message" mix may consist of a small proportion of negative messages, a somewhat larger amount of positive messages, and a majority of neutral messages.

Since there are individual differences in the amount of electrical stimulation required for either pain or pleasure, some will need strong stimulation while others will need very little. Exploratory behavior comes about when sensory input is low as an attempt to activate the pleasure areas by searching the environment for stimulation. Moviegoing, pornography, and drug addiction are mentioned as examples.

(H3) Interest in negative messages will be higher after a dull day, lower after an exciting day.

Directly relevant to the present paper is Campbell's statement that "this search for heightened sensory pleasure . . . has led to some of the ills of society." He also asserts that "behavior that is involved with matters that rationally must be considered unpleasant in actual fact gives pleasure," mentioning such activities as masochism, sadism, violence, protest, and dangerous sports.

(H4) High interest in negative messages may be motivated by a desire either for simple brain stimulation in a too-secure and boring world, or for masochistic pain to the self, or for sadistic pain to other persons, depending on the individual's personal biological makeup and environment.

(H5) People who use mostly the more primitive centers of the brain will get very little stimulation from verbal messages unless they are <u>strongly</u> pleasant or unpleasant.

(H6) High interest in negative messages is related to drug use more than to alcohol use.[6]

(H7) High interest in bad news is related to religiosity and other forms of sublimation or repression of natural urges.[7]

Eysenck's personality types. H. J. Eysenck is a British experimental psychologist who theorizes that our nervous structure determines our personalities and hence also our attitudes, preferences, and dislikes (Eysenck, 1973a). He also maintains that up to 80 percent of our behavior is predetermined by this genetic inheritance. His three major dimensions of personality are introversion-extroversion, neurosis-stability, and psychoticism (tough-minded vs. tender-minded).

He is explicit regarding the physiological basis of his three factors. The E (extroversion) dimension is a function of the excitation-inhibition balance, which depends on arousal of the cortex and threshold level of the reticular activating system. The N (neuroticism) dimension depends on the emotional activation, determined by the threshold of the visceral brain, which also determines autonomic reactivity. The P (psychoticism) factor is reflected by aggressiveness, cruelty, anti-social behavior, suspicion, and lack of feeling for others, and is caused by the male hormone level of the individual (Eysenck, 1973b).

(H1) Interest in negative messages is higher among extroverts, neurotics and tough-minded persons than among introverts, emotionally stable, and tender-minded persons, respectively.

The very highest level of interest in negative messages is among those persons who are neurotic tough-minded

extroverts and the lowest interest among stable tender-minded introverts.

Measurement of brain electrical activity shows that extroverts have less action going on in the cortex than introverts do and consequently require more stimulation. The sensitivity and emotionality of the neurotic personality comes from a physically sensitive and easily activated autonomic system, while the stable personality is relatively less sensitive to external stimuli and requires less of it.

Personalities can be determined by measuring responses to direct nervous system stimulation. Those classified as neurotic-extroverts are more prone to delinquent behavior, while neurotic-introverts are more prone to fearful avoidance of external stimulation.

Eysenck specifically asks the "neurotic paradox" question, "Why do organisms so frequently persist in behavior which is clearly punishing, or at least more punishing than rewarding?" His explanation is that the neurotic nervous system is more easily activated and more slowly-deactivated than the stable system.

Extroverts typically have a low level of arousal in the morning and higher levels in the evening.

(H2) Extroverts are more likely to be interested in negative messages in the morning than in the evening, while introverts will reverse this pattern.

Extroverts require less of a sedative drug than introverts do in order to become sedated, while introverts require less of a stimulating drug in order to become aroused. The very same stimulus, such as smoking, can be tranquilizing for the introvert and stimulating for the extrovert.

(H3) Involuntary exposure to negative messages will cause the introvert to become depressed and the extrovert to become pleasantly stimulated.

Eysenck on mass media. In a more recent work on the effects of violence and sex in the media, Eysenck and Nias (1978) link the empirical evidence on media effects to the neurological system and consequently to individual personality differences. In a highly discriminating synthesis of numerous empirical studies and relevant theory, Eysenck comes to the general conclusion that violent scenes in film, television, and theatre can both create aggressive behavior and increase established aggressive tendencies. He also concludes that the effects of pornography--as distinct from erotica--can be more pronounced than those of violence, but the effects are more variable depending on individual personality differences. Eysenck discusses several basic neurological and behavioral laws, principles, and theories relevant here--the law of initial values, evaluative conditioning, disinhibition, imitation, catharsis, and desensitization. The law of initial values is that the original state of an organism determines or limits the possible amount of change; a low baseline makes large increases possible, while small fractional increments to an already-high condition may have tremendous consequences.

"Evaluative conditioning" through long-term persistent repetition (as distinct from short-term conditioning) can change underlying values and attitudes located in what he calls the visceral brain and alter behavior patterns in either a healthy or unhealthy direction. Eysenck asserts that the major effects of media are from evaluative conditioning through prolonged massive repetition of certain themes rather than from specific messages and short campaigns. While most conditioned responses

extinguish when the original stimulus is removed, two kinds of responses--once established--incubate and grow on their own without further reinforcement: anxiety and sexual behavior. Thus, once implanted in the nervous system, anxiety and new sexual responses assume a life of their own. These learned or conditioned behaviors, whether healthy or unhealthy, are just as real and motivating as unconditioned or innate motives.

(H4) Prolonged persistent massive doses of negative messages leads to a permanent and perhaps growing state of anxiety, even after cessation of the messages.

The theory of disinhibition predicts that exposure to usually unacceptable acts will remove the usual inhibitions and cause an increase in those acts. Eysenck concludes that laboratory experiments on violence support dishibition rather than the catharsis theory, which would predict a reduction in aggressive behavior. The theory of modeling or imitation, which predicts that people will learn certain specific actions for carrying out motivated behavior, is also endorsed. The desensitization theory predicts that repeated exposure to the same stimuli will produce less and less brain arousal over time, and more and/or stronger stimuli will be required to maintain the same level. ". . . violence (on television) is going to escalate because the public always demands more than they saw the last time out" (Eysenck and Nias, 1978, p. 178).

The immediate post-WW II baby boom, accompanied by the widespread public availability of television starting around 1950, ties in with the disinhibition, imitation, desensitization, evaluative conditioning, and addiction theories to help explain the escalation of interest in negative messages of all kinds.

More than 75 million people, nearly one-third of the U.S. population, were born between 1946 and 1964. As this group has moved through the age pipeline in the "pig in a python" movement, they have successively become the bubble-gum market, the teen-age market, and now the massive young adult market of 18-36 year olds, which is now the major marketing and advertising target for products and for the mass media.

This massive young adult market has been raised largely on heavy exposure to television, with at least one-fourth of their waking hours to date spent before the tube and additional time spent with other mass media. It has been estimated that the average U.S. child sees 11,000 television murders by age 14 and 20,000 incidents of violence by age 19 (Eysenck and Nias, 1978). Exposure to so much violence has undoubtedly disinhibited the usual injunctions against such acts, provided specific models and techniques for imitating them, progressively desensitized them to milder incidents, and created a neurological need for more frequent and stronger negative messages to achieve the same amount of stimulation, and produced a true neurologically ingrained, acquired addiction through the evaluative conditioning process.

To these forces must be added the damaging effects on the cerebellum of young children caused by several hours per day of physical immobility--regardless of program content--which leads in itself to later hyperactivity, violence and other anti-social acts, suspiciousness, and a lack of feeling for others. This combination of forces has contributed not only to an increase in violence and other types of anti-social behavior in this country, but probably to an increasing interest in negative messages of all kinds (plus all sorts of other values and interests, of

course, that are different from preceding generations). According to Eysenck, "there is no doubt that the most violent culture, as measured by homicide and crime rates, is the U.S. . ." (Eysenck and Nias, 1978, p. 20).

(H5) Young adults of today are more different from the immediately preceding generations than any other generation in history in their message and media interests. Overall, they have a greater interest in negative messages of all kinds than preceding generations. Individually, the incubation of anxiety among some persons will create escalating levels of anxiety leading to more fearful avoidance of negative messages; among those rating high on the psychoticism scale there will be an increasing need for and interest in negative messages.

As more and more children are raised on TV in the same manner as post-WW II baby boom group, the aggregate levels of interest in negative messages will continue to rise, reaching saturation around the year 2020 when almost everyone in the country will have been raised from conception in the television culture.

Print media are probably less important in shaping later preferences and behavior than television. The brain is almost full-sized by age two, followed by slower growth in volume until age five. Unlimited passive exposure and attention to television is possible and prevalent during that time, while reading print media usually does not occur until after age five when the neurological programming becomes more difficult.

One possible consequence of being raised in a hypernegative world is desensitization to negative messages from an early age, a

neurological adaptation to the surrounding culture. However, those persons who were neurologically programmed in an earlier generation--those born before 1940--should be more sensitive and more affected in various ways than those born in 1950 or later. To this can be added the fact of a steady decline in sensation-seeking with age (Zuckerman, 1979).

(H6) In the present generation of mature and older persons--those born before 1940--an increasing ratio of negative messages will have more damaging effects than on subsequent generations of the same age. Dysfunctional effects may include depression, paranoia and anxiety, as well as more severe emotional problems or mental illness among those with such predispositions.

Among those born in 1950 or after, there will be greater tendencies toward psychopathic behavior than in the earlier generation, including greater preferences for negative messages of all kinds.

At the present time, among the 1950-and-after generation, apart from other differences, one would expect more psychopathic and anti-social behavior of all kinds--ranging from rudeness, callousness, and disrespect for other persons, all the way to physical violence and murder--along with a generally lower level of motor coordination, all dependent on the amount of immobility in the formative years.

Realistic violence is probably more harmful than fictional violence, according to Eysenck. Conversely, a calming effect on potentially aggressive persons is achieved when a television hero overcomes trouble in a peaceful fashion. To this may be added that, in the last

two decades, television has far outstripped the newspaper as the most frequent source of news (Roper, 1981). Both television and newspaper news stories have two characteristics that are relevant to the preceding information: first, news is realistic, especially when accompanied by on-the-spot photographs or films; secondly, a news story rarely has a hero and a negative event is rarely resolved, peaceably or otherwise, due to the pressure of spot news deadlines.

(H7) Negative news messages create more and/or stronger harmful effects than dramatic or fictional negative messages. Furthermore, because of the intuitively greater authenticity or sense of reality of photographs, pictorial negative news will have greater effects than verbal negative news. Overall, televised news will have greater effects, either positive or negative, than the same information presented in print. The greater selectivity of attention to print messages, and the additional source credibility of a known and trusted TV news spokesman, are additional variables affecting those predicted relationships.

There is apparently a common neurophysiological source for both sexual and aggressive behavior. Not only are the sex and aggression neural systems physically close in the limbic system, but there is even some overlap and direct neural linkage with each other. Eysenck says, "Sex and aggression are intimately linked, and stimulation along one dimension can easily lead to stimulation in the other" (Eysenck and Nias, 1978, p. 250). Painful stimulation can evoke sexual responses, while sexual stimulation can produce aggressive responses. With sexually related

material, however, an interesting reversal can take place: while strong sexual stimuli increase aggressiveness, weak sexual stimuli seem to decrease aggressiveness to an even lower level than sexually neutral material.

(H8) Strong explicit sexual matter may increase both aggressiveness and sexual activity. However, weak and/or less explicit sexual messages will decrease aggressive tendencies. Thus, certain kinds of sexual content will be not only highly interesting but have a cathartic effect on aggression. Experimentation is needed to specify more exactly which kinds of material are not only socially and legally acceptable but non-aggressive, with aesthetic or educational treatments as starting possibilities.

Zuckerman's sensation-seeking. American psychologist Marvin Zuckerman has validated a sensation-seeking scale based on the theory of a genetically based biochemical need for stimulation in the limbic reward system of the brain (Zuckerman, 1979).

Sensation-seeking is measurably higher for males than for females and for younger than for older persons. While American and British men have equal sensation-seeking scores, American women score significantly higher than British women.

(H1) High sensation-seeking should generally be associated with high interest in negative messages. If so, men and young people should be more interested than women and older people. American women should be more interested than British women.

Intelligence[8] has only a slight relationship to sensation-seeking. However, the high sensation-seeker processes information very efficiently

and has a high capacity for original thinking that often does not reveal itself in school or college grade point averages. The low sensation seekers tend to be cognitively simple, unoriginal, and nonfluent.

(H2) Intelligence and sensation-seeking are independent traits, but intelligence may determine the kinds of information sought out. High seekers with low intelligence should be more interested in violence, disaster, and accidents than those of higher intelligence. Those with high intelligence will seek out other kinds of information rather than negative messages for stimulation, probably leaning more toward scientific, creative, and aesthetic activities.

High sensation-seekers tend to have more actual experience with and seek out such things as parties, travel, risky sports, variety, sex, drugs, and alcohol. Their personality is characterized as more uninhibited, non-conforming, impulsive, and dominant but not related to friendly sociability. Excessively high scorers tend to fit the manic-depressive pattern in both behavior and tests of their physiological chemistry.

More to the point for communications, high sensation-seekers are more likely to attend X-rated movies, read fiction, and listen to music. Strangely, sensation-seeking is unrelated to general television watching, but this measure reveals nothing about possible relationships with different program categories.

There are actually four dimensions representing different kinds of sensation-seeking, not all of which are highly related to each other. Zuckerman labels these four types as follows: Thrill and Adventure Seeking, linked to direct participation in sports, speed and danger;

Experience Seeking, linked to travel, drugs, music, art, and an unconventional life style; Disinhibition, the "swinger" type linked to hedonistic activities such as wild parties, social drinking, sexual variety, and gambling; Boredom Susceptibility, linked to a dislike for repetition, routine, dull people, and monotony of any kind.

(H3) The different sub-types of sensation-seekers will probably seek out different kinds of information and mass communication, both bad and good. The preferred subject-matter in mass media will be related to the kinds of sensation they seek out through direct experience.

The Thrill-Adventure and Disinhibition types should spend less time with mass media and more in direct activity, while the other two types will have a higher ratio of mass media activity.

Wilson's sociobiology. Edward Wilson's controversial views on sociobiology are related to the psychobiological theories (Wilson, 1978). Sociobiology is defined as an effort to understand the contribution of natural selection to the brain and hence to behavior. Wilson's basic premise is that the present human brain evolved through natural selection over thousands of generations, resulting eventually in a biological basis for those behaviors with high survival value.

(H1) An alertness to danger has always had high survival value. We are genetically programmed to be alert to certain primitive dangers. When real physical danger is present, interest in media negative messages will decrease. In relatively safe environments, media negative messages will serve as a need-satisfying substitute and interest will

increase unless other methods are used for scratching that limbic itch.

Wilson believes that the resulting instincts (needs, drives, motivations) that unconsciously affect our choices, ethics and morality are a complex array of neurons and hormone-secreting cells within the limbic system.

According to Wilson, "Human nature is a hodgepodge of specific genetic adaptations to an environment largely vanished, the world of the Ice Age hunter-gatherer."

(H2) An over-alertness to irrelevant primitive danger signals--including high interest in irrelevant bad news--is an obsolescent remnant of primitive behavior that is both immediately dysfunctional and on the way out genetically.

Alertness to currently relevant and important news of realistic danger, on the other hand, has positive survival value. Certain kinds of bad news--e.g., economics, health hazards--probably fall in this category.

Some of the innate behaviors still found in every human culture are eschatology, faith healing, superstition, magic, belief in supernatural beings, phobias for such things as snakes and heights and enclosed places, aggressiveness, and fear of strangers or "outsiders," to name only a few.

(H3) Frequency of exposure to strange objects or ideas leads to familiarity and a reduction of fear. An emphasis on international and non-local messages in the mass media will in the long run decrease our innate fear of strangers and tribalistic instincts. Mass communications may eventually be the great peacemaker, if programmed with appropriate content.

(H4) Journalists and other mass media gatekeepers can either

hinder of help the progress of human evolution. They will hinder it by overselection and over-emphasis of irrelevant negative messages which appeal to primitive fears, an awareness of which, despite possible high interest value, has no survival value in present times. Important negative information, on the other hand, even though of low initial interest, can be made more interesting to the public through frequency and display techniques, and thus contribute to positive survival value.

Tiger's optimism. Anthropologist Lionel Tiger has the theory that optimism is a biologically essential human survival characteristic, a biochemical, genetically ingrained trait that enables us to cope with the problems, fears, dangers, strife and difficulties inherent in all life (Tiger, 1979). However, he also asserts that when reality, or the perception of it, becomes too negative or insurmountable, then the capacity for optimism becomes diminished. A similar but overzealous view is extended by two American psychologists with their "Pollyanna Principle" (Matlin and Stang, 1978). Surprisingly, the optimism anthropologist and the Pollyanna psychologists do not cite each other's works and apparently reached essentially the same conclusions independently at about the same time.

According to Tiger, optimism has survival value even when based on illusion rather than fact. Optimism enhances striving, social structure, and cohesion. The survival value of optimism lies not in the Pollyannaish notion that all is good, but in the belief that there are positive alternatives mixed in with all the negatives faced in a normal world, this belief giving us the biochemically based energy to work at

seeking alternatives even when things are at their worst.

(H1) Certain kinds of relevant negative messages (e.g., news) can have increased survival value if tempered with suggestions for action or solution, prescriptions for overcoming, and other constructive approaches beyond mere factual recounts. Other kinds of necessary negative messages may have survival value without any positive embellishments.

It follows, of course, that pessimism and hopelessness have negative survival value.

(H2) Many kinds of highly interesting but irrelevant and non-actionable negative messages probably have negative survival value for the species and should be eliminated entirely from the mass media.

Faith healing and placebo effects on the one hand, and voodoo deaths on the other, provide real evidence of the respective powers of optimism and hopelessness. He does comment gloomily that "the tools and scope of human mischief have swollen decidedly more rapidly than the means to understand and (certainly) control them," although he does not specifically mention mass media in this regard.

In Tiger's view, there is real danger in over-exposure to negative information. When people are "in a state of almost constant apprehension because they have lost the human capacity to screen out the signs of danger out of their line of vision," this can result in illness, sexual malfunction, family troubles, and social dysfunctions.

(H3) Over-exposure to negative messages--particularly involuntary exposure--can be harmful to the individual's mental, physical and social health, and contribute to a breakdown

of credibility and confidence in the media, government, family, business, and other societal institutions,

The optimism theory is thus not incongruent with all the earlier evidence on the various manifestations of attraction to negative messages. Optimism, pessimism, and realism are undoubtedly independent traits in every individual, co-existing in a neurobiologically-based variety of different motives enabling us to adapt to a correspondingly wide array of external situations. There is no incongruity in the fact that we can both laugh and cry, love and hate, or go to the symphony one night and read a murder mystery the next. Just so, both optimism and an attraction to negative messages within reasonable limits may be the necessary Yang and Yin for human adaptation and survival. Realistically, however, the wide range of individual differences in all other human characteristics makes it very likely that some people have too much Yin and others too much Yang rather than a happy balance that would be more felicitous.

Solomon's opponent-process. American psychologist Richard Solomon has proposed a motivation theory which is a scientific version of the old saw, "It feels so good when I quit." He calls it "the opponent-process theory of acquired motivation: the costs of pleasure and the benefits of pain" (Solomon, 1980). He finds that after sufficient repetition there is a pleasurable withdrawal syndrome attached to things that are initially perceived as frightening, disgusting, irritating, or physically painful. The absence of what was initially negative becomes positive. The reverse also happens: things that are initially positive result in a negative feeling when removed. His theory aims to explain a wide variety of acquired behaviors such as drug addiction, cravings for

sensory and aesthetic experiences, parachuting, marathoning, sauna-bathing, and even painful self-administered stimuli such as electrical shocks.

(H1) A liking for negative messages is partially an acquired motive, the basic drive for which might just as easily be channeled into equally stimulating but more constructive pursuits such as problem-solving, scientific, and creative efforts--particularly at early ages.

Solomon concludes that "repeated pleasures lose a lot of their pleasantness and make one potentially capable of new sources of suffering." Oscar Wilde, of course, anticipated Solomon's wisdom in his epigram that the best way to eliminate a pleasurable vice is to indulge it.

Solomon asserts that there are both acquired and inherent motives, that the acquired motives can be equally or more powerful than the biological kind, and that acquired motives follow the same principles and laws as physical addictions.

(H2) If at first you dislike negative messages, continue exposure and you'll eventually become hooked. Negative messages can become addictive even without seeking them out. Involuntary or forced exposure to negative stimuli in the mass media is quite prevalent, either through passivity or because the negative stimuli are interspersed with positive stimuli.

MacLean's triune brain. An eminent brain researcher, Paul MacLean, has produced evidence that the human brain has evolved through three distinct stages, all of which are still present in what he calls

the triune brain (Long, 1980; MacLean, 1981). Our brain consists of a primal mind called the R-complex or archipallium from reptiles, overlaid with an emotional mind called the limbic brain or paliopallium from mammals, and the more recent addition called the neocortex from later mammals.

(H1) The ideal mix of information for the human will include material to satisfy the stimulation needs of all three brains--the primal reptile brain, the emotional limbic brain, and the reasoning neocortex.

Since those three functions vary in strength among different individuals, however, the proportions needed will vary. In some individuals, some of the primal needs may be so slight as to be largely satisfied through mass media; in others, those needs may be so strong that the mass media will trigger a catalytic effect, particularly if the limbic brain and neocortex are underdeveloped.

The basic reptile brain produces aggressive behavior, violence, obsessive-compulsive neuroses, mass hysteria, deception, our daily necessary maintenance routines, and other unthinking, repetitive action. This R-complex is also considered the seat of our basic personalities.

(H2) News of aggression, violence, sex, and other primitive behaviors may have either cathartic or catalytic effects on the stimulation needs of the R-complex portion of the brain. This might be determined by brain-wave measurements.

The second layer or limbic brain arrived with the early mammals to provide the seat of love, affection, care of the young, family ties,

social bonds in the community, and generally guiding behavior in the direction of emotionally colored feelings. All mammals have this feature.

(H3) Information on the family, children, love, affection and other mammalian emotions may appeal primarily to the limbic brain.

The third and most recent overlay is the neocortex, present in all animals but presumably at its largest in humans, making possible language, foresight, planning for the future, insights into others' feelings, and that sense of responsibility that we call empathy, conscience, ethics, or morality.

(H4) Abstract and other intellectual information not dealing with primal or emotional matters is probably processed by the neocortex.

MacLean believes that the development of the prefrontal neocortex can be speeded up, to better control aggression and violence and to expand empathy and altruism.

(H5) A higher proportion of positive messages over long periods will have beneficial effects on children especially, and to a lesser extent on adults, through evaluative conditioning effects on the appropriate neural pathways. In addition to positive effects on individuals, if continued over many generations, an emphasis on positive messages will have long-term species survival value and gradually decrease aggression and violence.

Restak's summary. Neurologist Richard Restak has provided a very readable non-technical summary of the findings, methods, and applications of brain research, from which many hypotheses about interpersonal, mass, and other forms of communication can be derived (Restak, 1979). He contends that the search for novel stimulation has survival value (biological utility) beyond the momentary reward or punishment by maintaining electrical activity in the hippocampal region of the brain.

Restak defines the three major functions of the brain as: alertness or wakefulness, dependent on the reticular formation in the brainstem; information processing, principally located in the cerebral cortex; purposive, "willed" action or goal-directed behavior, starting in the prefrontal lobes and considered to be the superstructure that energizes, coordinates, and regulates all the higher mental processes, especially those acts related to speech. Every action, from simple to complex, is considered to be the product of all three functions--alertness, information processing, and purpose--with harmonious interaction necessary for optimal functioning.

(H1) The function of irrelevant personally unimportant negative messages is to maintain a state of alertness. Diversive exploration to overcome a state of boredom will thus affect the reticular formation more than the cortex or prefrontal lobes. Specific curiosity, however, is purposive behavior, starting in the prefrontal lobes.

The same negative message may be attended by two persons for neurologically different needs--one to reduce arousal by finding relevant necessary information, the other to increase

arousal by any means and maintain alertness.

Restak borrows from McLean's triune brain theory and Wilson's sociobiology the notion that those behaviors with survival value have, over eons of time, become etched into the neural tissue as biological imperatives. A constant state of alertness in the reticular formation is necessary for life, and alertness-to-danger has or had particular survival value.

(H2) The high interest in negative messages results from innate neurological patterns in the reticular formation, highly sensitive and ready to respond to danger signals in the environment. When no real danger is present, the biological need for stimulation leads to diversive exploration for symbolic danger messages.

Real danger will be attention-getting under any conditions. The interest-value of irrelevant symbolic danger-messages or novelty-without-danger is probably inversely related to the amount of arousal in the reticular formation--i.e., increasing boredom leads to increased interest in novel or negative messages.

He makes the intriguing observation that "no one has ever demonstrated . . . that genius, or even increased intelligence, can enhance survival value in the human species" and that man's ". . . explosive brain growth during the last 250,000 years remains the most inexplicable aspect of evolution" (Restak, 1979, pp. 68-69).

Since verbal communication is a function of cerebral cortex size, and if survival value is <u>not</u>, then one might question the long-term species survival value of verbal communication. Many species--reptiles,

ants, and dolphins, for example--are much older than man and are surviving nicely without speech. There is even the possibility that an excessive proclivity for verbal communication might be dysfunctional or even have negative survival value.

(H3) The increasing size of the cerebral cortex had led to increasing biological need for verbal and other kinds of communication. Consequently, in a market-demand oriented society, there is an increasing supply of messages and media.

In a relatively safe and routinized world, exploratory behavior may be more diversive and non-specific rather than goal-directed specific curiosity. Indiscriminate attention to messages or an increasing attraction to negative messages for sheer sensation to avoid boredom might result. An increased intake of negative messages could lead to addiction, desensitization and tolerance, requiring stronger and stronger stimuli for satisfaction. This increasing need for verbal stimulation may be satisfied in some persons by internal means (thinking, creativity, etc.) and in others by external means, depending on intelligence, personality, availability of external messages, and other variables.

(H4) At one time, "muckraking" by the media served a useful purpose and was encouraged. However, an over-supply of negative messages provided by market-oriented media can satiate or over-stimulate the audience to a point of, first, perception of the over-supply, and second, a re-channeling of

stimulation needs, and greater selectivity in attention. When that point is reached one might predict lower audience interest in negative messages, followed after some lag by fewer negative messages in mass media, followed still later by some improvement in moods, emotions, attitudes toward institutions and individuals, optimism, and reduction of anti-social behavior.

One general psychobiological principle is that physical motion of the fetus, infant, and young child is necessary for proper development of the neural pathways leading to and from the brain's pleasure-experiencing centers. Without enough early movement and touch, a permanent neurological defect is created which results in poor motor coordination, hyperactivity, disturbed behavior, and a tendency toward violence.

Thus, long periods of immobility in fetuses, infants, and young children can be very specifically harmful in later life. In the United States, the average two-to-five year old spends over one-third of his waking hours with television (Eysenck, 1978). Expectant mothers and new mothers with infants also spend considerable time with television.

(H5) The presence of television for the past three decades has resulted in an average decrease in physical movement among pregnant women, fetuses, infants, and children. This has resulted in abnormal brain development among many in the 30-and-under generation, dependent on the amount of time spent with television over the years. The amount of television watching is positively and causally related to subsequent tendencies for poor motor coordination, mental

illness, violent behavior, and a preference for negative messages of all kinds.

The brain-damaging effects of infant immobility from television watching operate irrespective of television content, which might be considered as convergent validation of McLuhan's claims. However, it is probable that message negativity is an additive independent variable. Long periods of relative immobility accompanied by a high proportion of negative messages will have more undesirable effects than immobility alone or immobility with neutral or positive messages.

Apart from physical immobility, there is evidence that television watching is accompanied by decreased mental activity (Weinstein, Appel, and Weinstein, 1980). When identical advertisements were presented on either a magazine page or a television screen, more beta brain-wave activity accompanied the magazine ad. Even more to the point, a blank magazine page produced more brain-wave activity than a blank television screen. Apparently, experience with television produces expectations or predispositions that cause people to approach television exposure with reduced mental activity. In short, television watching creates physical immobility, and the expectation of television watching produces mental passivity.[9]

(H6) Prolonged exposure to television in the early years will result not only in a temporary reduction of brain activity but in reduced brain activity in later years, leading to difficulties with complex processes such as perception, learning, thinking, attention, and motivation. This will

be especially evident in message preferences, in favor of simple and easily understandable messages, pictorial and non-verbal messages in preference to verbal messages, and messages that stimulate the primitive limbic and R-complex brain areas in preference to those stimulating the cerebral cortex. Thus, negative messages will be preferred over positive messages, and novel surprising messages will be sought out, for their immediate stimulus value.

Brain cells (neurons) are separate cells that are never in direct physical contact. Information moves through the nervous system by electrical charges from one cell which must jump a gap (synapse) filled with chemicals called neurotransmitters to reach the next cell. Neurotransmitter chemicals are of two kinds, those that help conduct the electrical charge (excitary) or those that hinder, insulate, or inhibit it (inhibitory).

More of the nerve-cell activity in the brain is inhibitory than excitatory; that is, the receiving cells in the intra-brain communication network have a selective rejection bias, or negative set, toward receiving new messages. Thus, the individual's internal communication system is similar if not analogous to human selective attention in the larger world; in a world with more messages and other stimuli than can possibly be attended, there is a selective rejection bias. Most stimuli must be rejected.

(H7) The human tendency to reject more messages than are accepted is a reflection of the preponderance of negative or inhibitory neurotransmitters in the human brain. In a

world with constantly increasing supplies of messages and media, this rejecting predisposition will result in (a) an ever-increasing ratio of rejected to accepted messages and (b) an ever-increasing preference for novel and/or negative messages.

Since the number of media and messages are constantly increasing, the interest value of negative messages will continue to increase among those persons with low capacity for, or inaccessibility to, other kinds of stimulation. In others, this increased selectivity will result in more attention to truly educational material, thinking, and creative activities.

Restak asserts we can never be conscious of most events happening in the brain. A non-conscious filtering process is necessary for us to concentrate on the relatively few things that interest us. A defective filtering capacity is considered the basic defect in hyperactivity and some forms of schizophrenia. Such persons are literally overwhelmed with stimuli and can only function by using medications which reduce incoming messages to manageable levels.

(H8) We approach any environment with a negative set, prepared to filter out irrelevant stimuli. The more stimuli in the environment, the more negative the set. Uninteresting stimuli are rejected at a non-conscious level, but even though one cannot recall the rejected messages, some traces remain as images or patterns in the right hemisphere or other "affect" areas. Our brains are changed even by rejected stimuli, probably in moods and emotions

rather than in verbal recall.

We may conceive of at least four kinds of motivation for exposure to messages, as deduced from various theories thus far. These can be labelled as (a) specific exploration exposure, resulting from the curiosity motive; (b) diversive exploration exposure, resulting from the boredom motive; (c) rejection-without-awareness exposure, resulting from a general avoidance motive; (d) forced-attention exposure, resulting from outside forces and accompanied by specific neurological motives to avoid the stimulus.

(H9) The effects of any message will be different for each of those four neurologically different motive states. The differing effects can be detected by appropriate ERP measures.

There does appear to be an unconscious attentional switching-circuit that permits selection or rejection of stimuli without awareness, located in the reticular activating system (RAS) that screens impulses to the cerebral cortex (Furst, 1979). Eye-movement camera studies show that in scanning a newspaper page the individual is physically exposed to virtually every headline on the page, necessary of course in order to make a decision on which items to read and which to reject. On the other hand, readership studies show that conscious awareness or recognition of many items on a newspaper page is relatively low. Apparently the go or no-go evaluation occurs at an unconscious level in the scanning process, but the individual has nevertheless cognitively processed all the items rejected. Some residue from the rejected items, though unrecallable through normal questioning, can probably affect moods and cognitive processes.

(H10) An individual uninterested in bad news might nevertheless become depressed or otherwise affected simply by scanning bad news headlines even though the stories are rejected and not consciously recallable.

On the other hand, bad news that is voluntarily selected will have different effects on mood and other mental processes.

In the normal process of exposure to the mass media, selectively rejected positive and negative messages will still have corresponding effects in brain processes.

Restak asserts that, even during the most routine tasks, extraneous thoughts and images are constantly occurring to everyone, random thoughts ranging from mundane to fantastic. Both daytime imagery and nighttime dreaming are said to play a critical role in mood and personality.

(H11) The frequency and intensity of external messages may affect the ongoing stream of imagery. Constant attention to media may interfere with normal mood and personality processes, enhance them, or change them in other ways. Imagery content will be changed by heavy media exposure to be more like the messages received. Since selective perception, attention and recall favor negative messages, heavy media exposure will be accompanied by more and more negative imagery, attitudes and thoughts.

Among most persons, the left eye processes pictures (through the right hemisphere of the brain) while the right eye processes words (through the left hemisphere). Restak proposes that the most pleasing

aesthetic arrangement of picture-text combinations is to counter the eye-brain processing bias by putting pictures on the right, text on the left.

(H12) In printed material using both pictures and text, such as magazine and newspaper ads, articles or illustrated books, the most pleasing arrangement for most persons will be to put pictures on the right. However, more learning will take place by catering to eye-brain natural tendencies and placing the picture on the left.

For those persons with reversed lateralization of brain-hemisphere functions (e.g., left-handers), a reversal of this practice will be most effective.

Normal left-handers use opposite hemispheres than normal right-handers for similar functions. Restak claims that the proportion of left-handers in the population is increasing, for reasons unstated.

(H13) An increasing proportion of left-handers in the population will lead to an increased number of differences in aesthetic preferences. Different communication, persuasion and teaching techniques are necessary for maximum effectiveness in left and right-handed populations.

Males and females are different from each other, starting at conception and birth, in innate biologically-determined characteristics which create differences in brain function. Females are generally better on left-hemisphere tasks while males are better on right-hemisphere tasks. However, both hormones and environment can program the brain in either a male or female direction. High intellectual achievement is

associated with cross-sex (and cross-hemisphere) typing--i.e., androgyny, males with some feminine traits or females with some masculine traits.

Event-related potentials (ERPs) are among the predominant measures used in psychobiological research. As noted earlier, they are obtained through electrodes attached to the scalp, by computer-averaged responses to specific stimuli presented dozens of times to eliminate irrelevant background neural noise.

A particular response which occurs 300 milliseconds after the stimulus--the P300 response measure--is considered by Restak to be the best measure of complex mental states. Analysis of the height of the P300 measure has shown that uncomprehended words produce more reaction than if comprehended, that surprise events evoke twice as much response as predicted events, that unfamiliar objects get more responses than if familiar. The wave is even related to judgment or executive decision-making ability; when the P300 wave appears before a motor or behavioral response, this is favorable to good judgment. But when a motor response appears before the P300 wave, the neurological expression of impulsive behavior ("acting before you think"), this is indicative of poor decision-making ability. The P300 or "surprise and executive" wave is considered to be the first objective measurement of brain activity corresponding to an act of the will, telling exactly when decision occurs.

(H14) The P300 may be useful in selecting certain kinds of communications personnel, when sound judgment and non-impulsive behavior are at a premium. This should be particularly important for selecting editors, investigative reporters and other communications gatekeepers

who must make numerous message decisions rapidly. The P300 "executive response" may be unrelated or even negatively related to the performance of creative personnel--writers, artists, musicians, etc.

Other ERP waves have been shown to have distinct identifiable relationships to behavior (Selden, 1981). The N100 or "cocktail party" or "newsroom" wave indicates highly selective focused attention to one stimulus in the midst of many, under the necessity for high concentration amidst distraction. The N400 or "double-take" wave occurs in response to incongruent stimuli, indicating re-processing of a situation that doesn't make sense (distinctly different from surprise, as measured by the P300). N400 doesn't show up with syntactic errors, only with semantic incongruity. The CNV or "pleasure expectancy" wave is related to the amount of pleasure one anticipates from an event, before the event itself occurs.

(H15) The brain's responses should be useful in pretesting all kinds of messages--news topics, magazine articles, advertisements, new ideas of all kinds.

The several known types of measures undoubtedly measure different kinds of effects from messages.[10] For example, one wave might be a "scanning" wave for measuring the initial attention value of a large number of newspaper headlines. This might be followed by another wave indicating importance or novelty-value of those headlines that attracted initial attention. Still another might indicate whether the headline creates pleasurable (positive) anticipation for reading the related news

story or unpleasurable negative anticipation, perhaps the operational definition of good and bad news, positive and negative messages. The N400 wave is a measure of comprehensibility of a message. Different waves, in short, may be ways of pre-testing various stages in the communication sequence--from initial low-attention scanning, to interest in a particular message, message importance, learning, positive or negative attitude, comprehensibility, and behavioral intentions.

ERP measurement reveals conclusively that every thought triggers complex and distinctive brain waves, and that enough analysis will reveal just which waves are associated with which mental processes, subsequent behaviors, and subjective reports.

Evoked responses can detect certain mental aberrations and provide early warning for mental illness. Psychopaths have a distinctive response pattern, failing to respond neurally to harsh or irritating stimuli, even though they subjectively report complaints. Restak concludes that psychopaths are not affected neurally by negative stimuli and therefore fail to learn from negative experiences. Psychopathy is an extreme form of psychoticism, the toughminded-tenderminded personality variable which results largely from innate neurological patterns, manifested in varying degrees of cruelty, insensitivity to others, suspiciousness, and anti-social behavior.

(H16) Psychoticism, as measured by the Eysenck P scale, should be related to interest in bad news and other negative messages.

Restak states that people can regulate their own emotions and

health to some extent through conscious specific motor behaviors. For example, just as brain patterns for joy, sadness, or anger can affect the face muscles, conversely the conscious change of face muscles can affect corresponding brain patterns. Biofeedback therapy is another example.

Imagery also exerts a measurable physical effect on the brain. Merely thinking about an activity brings about brain responses similar to actual performance. Thus, verbal therapy is neurotherapy, even without conscious awareness of change.

(H17) Incoming messages affect our thoughts, moods, and the corresponding neural structures. Repetition creates increasingly permanent neural states. Positive messages will create favorable effects, negative messages will have unfavorable effects.

However, by conscious control of the communication to which one is exposed, the individual can at least to some extent shape his own imagery, emotions, permanent neural system, and physical health.

Pain, physical or mental, serves a useful function by warning and protecting against damage to the system. Realistic danger signals of other kinds also serve a useful purpose.

(H18) Unrealistic danger signals--for example, irrelevant negative messages--will desensitize the body's warning system and create greater vulnerability to real danger, through a lowered ability to detect or discriminate among such messages.

The body has its own narcotic to control pain, endorphin.

Increased pain requires an increase in the needed narcotic. But when artificial means are used to control pain, natural endorphin ceases to be manufactured, leading to more dependence on the artificial, resulting in addiction and an ever-increasing need. Addiction can occur with acquired motives as well as with inherent ones.

(H19) The fact that people are highly interested in bad news and yet report "too much bad news" as their major complaint against news media indicates the presence of a true addiction. Since irrelevant bad news stimulates the brain in the same way as real danger, less discrimination for real danger along with an increasing interest in negative messages may result.

Restak comments that fear and aggression were useful during thousands of years of prehistory when our ancestors had to battle for survival. Today, those same emotions, when unchecked or unrecognized, lead to dangerous and dysfunctional acts, including paranoia and violence.

(H20) Messages aimed at stimulating ancient neural patterns of danger-alertness, fear and aggression will get high attention, even when irrelevant or unimportant to the individual, and produce inappropriate behavior. While the brain can survive certain amounts of dysfunctional messages, it cannot maintain a normal state under massive onslaughts of bad news, violent TV programs, horror movies, and other negative messages.

Restak concludes on a point already noted by others, namely that most of us live in highly safe and predictable environments, with jobs,

experiences, and human contacts changing little from day to day.

(H21) Among persons of lower intelligence, a highly predictable and safe environment will produce higher interest in negative messages. Those with higher intelligence and creativity will generate cortical stimulation to satisfy the needs of the primitive brain.

Summary and Conclusions

The primary purpose of this paper has been to call attention to psychobiological research and theory as a new approach for understanding human communication behavior. This general goal was attempted through showing the relevance of psychobiological principles in forming hypotheses about one specific question: What are the motives underlying the selection of particular messages, and more specifically, what is the motivation for high interest in negative messages?

To set the stage, various hypernegative communication hypotheses were presented. These hypothesize an excessive and increasing emphasis on negative messages in mass media and other communication systems; high human interest and fascination in negative messages; a tendency for communication gatekeepers to overselect and overemphasize negative information; the damaging effects of excessive negative messages on individuals and society; an increasing wave of concern among the public, various critical and professional groups, and some researchers regarding the negative onslaught; our lack of knowledge about the motives underlying human interest in and preoccupation with negative messages. There is supporting evidence for these hypotheses in mass communication, and at least the speculation that they may also apply to certain other kinds of communication systems--interpersonal, organizational, intercultural, political, instructional, health, religious, and aesthetic, to name a few.

After that introduction, some highly selected psychobiological principles and propositions were distilled from a multi-disciplinary

variety of theorists and researchers--a medical researcher, two physiological psychologists, several other psychologists with experimental and personality and motivational focuses, a physiologist, a sociobiologist, an anthropologist, and a neurologist. Some of their works, in turn, were syntheses from other more specific disciplines of experimental psychology and neurophysiology.

From each of these psychobiologists, some specific original hypotheses were generated by this writer concerning human communication behavior, particularly the motives underlying message selection. These hypotheses can be useful in two ways: (1) as ideas for specific further research on the message selection and motivation question, and (2) to illustrate the process of applying the universal and basic principles of human behavior from psychobiology to other fields of human communication. From such hypotheses, the next step of planning appropriate research projects is relatively clearcut.

Some emerging principles. Given space enough and time, many general psychobiological principles and some general communication hypotheses could (and will be) distilled from the preceding and somewhat redundant collection. For the moment however, this summary will close with a few of the most highly salient points.

1. All mental processes, including those involved in communication, begin and end in the human brain. Some of the higher mental processes involved in communication are perception, attention, learning, thinking, conscicusness, and motivation.

2. The human brain has evolved into its present state through natural selection of those behaviors with survival value, and it is still evolving.

3. Interest in negative messages may arise from genetically programmed biological needs for physical safety or warning from danger. However, this may be among those biological inheritances which are now partially obsolescent, obsolete, or even dysfunctional, possibly with negative survival value for our species.

4. The present physical neurological structure of the brain is a direct result of this natural selection. The "triune brain" consists of three hierarchical layers--a primal reptilian brain called the R-complex, a later overlay called the early mammalian limbic brain, and then the neocortex from later mammals. All three brains independently and simultaneously process all incoming messages in different ways.

5. The brain contains many different functional systems, each powered by electrical (or electro-chemical) activity. Each system has a true biological need for a certain level of arousal (i.e., electrical activity). Various kinds of communication can affect the arousal level of various systems.

6. <u>These biological needs for more or less arousal in various parts of the brain are in fact among the basic motives behind various human behaviors, including the acts of sending, receiving, and selecting particular messages</u>.

7. Long periods of physical immobility by fetuses, infants, and young children lead to neural deficiencies which later result in hyperactivity, poor motor coordination, anti-social behavior, and possibly increased interest in negative messages. Regardless of program content, the "television generation" may have a higher incidence of these neural deficiencies.

8. Exposure to messages affects brain processes. An excessive

quantity of negative messages changes the electro-chemical processes and can result in temporary or permanent undesirable changes in moods, feelings, attitudes, other mental processes and behavior. Evaluative conditioning is the term for neurological changes in attitudes and values from prolonged exposure to the same kind of messages.

Acquired motives can be just as strong and persistent as innate biological motives, resulting in permanent neurological changes and even addiction. Anxiety-producing stimuli are among those which incubate and continue to grow rather than become extinguished after withdrawal. Negative messages can create anxiety, and addiction is a possibility.

10. Both innate and acquired motives are as likely to be non-conscious as to be conscious. Subjective verbal reports on the motivation for selecting particular messages are likely to be rationalizations of unexpressible biological needs.

11. The ongoing arousal or activity in various functional and motive systems in the brain can be measured with some accuracy through the technique called event-related or evoked-response potentials--ERP's. That is, the presence and strength of various motives are empirically measurable, though not all have been identified.

12. Furthermore, ERP's can measure the responses of specific brain systems to specific messages or other stimuli. In short, the effects of messages on the brain itself can be objectively and quantitatively measured.

13. Different ERP responses indicate different effects on mental processes. The P300 wave indicates novelty or surprise value of a message; the N100 or "cocktail party" wave indicates highly selective focused attention in the midst of distractive influences; the N400 or

"double-take" wave indicates reprocessing of a semantic incongruity but it doesn't show up for syntactic errors; the CNV or "pleasure expectancy" wave is related to the amount of pleasure one anticipates from an event before the event occurs.

14. Different ERP responses can be useful in pretesting the effectiveness of messages at various stages of processing--attention value, importance, comprehensibility, attitude change, pleasantness, and behavioral intentions. They may also be useful in selecting communications personnel for particular decision-making and message processing jobs.

15. The term "morbid curiosity" is conceptually and neurologically inadequate to describe the phenomenon of human attraction to negative messages or unpleasant events. Brain measurement reveals at least two distinctly different neurological motives for seeking information and other exploratory behaviors. The first may be called the curiosity syndrome, the second the boredom syndrome. Curiosity is the term for a state of measurable over-arousal resulting from a lack of information about some particular referent, which results in an active search for certain specific messages to relieve the uncertainty and thus reduce the arousal state to a comfortable level. Boredom, on the other hand, is a state of neurological under-arousal or lack of stimulation which results in diversive exploration for any messages which will increase arousal to a comfortable level.

16. Selective attention to a particular message may be motivated by either of these two neurologically different motives-needs, boredom or curiosity. Subjective reports on the "reasons" for interest or other behavior may be misleading. The mere fact of high interest in and attention to a message, without simultaneous brain measurement, will not

reveal the specific underlying motive for interest or any other behavior.

17. Personality is a neurological characteristic which both motivates interest in, and is affected by, negative messages and other stimuli. Interest in negative messages is probably higher in extroverts, neurotics and the tough-minded (psychotics) than in introverts, the emotionally stable and the tender-minded. Other personality characteristics such as sensation-seeking are also probably related to this interest.

18. There are wide individual differences in the need for negative, positive, and other stimuli, dependent on the individual's neural, experiential, demographic, psychological, and environmental characteristics.

19. The same message may have opposite neural effects in different people. For example, a negative message will be pleasantly stimulating to an extrovert and depressing to an introvert.

20. There are diurnal and other cyclical changes in the individual's interest in messages. For example, extroverts prefer highly stimulating messages in the morning more than later on, while introverts reverse this pattern. Neurological differences account for these patterns.

21. Sexual and aggressive behavior are physically close neighbors in brain neurological systems. Strong stimulation of the sexual centers can evoke either aggressive or sexual responses. However, weak sexual messages tend to reduce aggressive tendencies.

22. Both aesthetic preferences and interest in negative messages may stem from the same neural system.

23. The human necessity to reject more messages than are attended

is an analogy and perhaps a function of the preponderance of negative or inhibitory neurotransmitters in the human brain. With this "message rejection bias," screening the environment to filter out irrelevant stimuli is accomplished by a particular part of the brain at a non-conscious level. However, even those messages rejected without conscious awareness can affect moods and other mental processes.

24. Messages aimed at stimulating ancient neural patterns of danger-alertness, fear and aggression are highly likely to be attended, even when irrelevant to the individual or leading to inappropriate behavior.

25. The desire for negative messages may be greatest when life is most positive, lowest when life is most negative.

The threat and promise of psychobiology. Psychobiologists have few kind words to say about either stimulus-response psychology at one extreme or about traditional philosophy at the other. "Behavioral psychology as a legitimate explanation of human behavior is a failure and should be quietly buried at a small private funeral limited to B. F. Skinner and other members of the immediate family" according to Restak (1979, p. 382). Regarding the contribution of philosophy, psychobiology in the last fifteen years has ". . . pointed up the intellectual hauteur and bad faith inherent in such a narrow approach. . . . From here on in, those who would expound on the mysteries of human thought will have to know as much about brain physiology as they do about Greek philosophy" (Restak, 1979, pp. 380-381).

Some of the basic assumptions of psychobiology are almost sure to create resistance and controversy among communications scholars because those assumptions depart from classical philosophical approaches to the

mind-body problem (Uttal, 1978). Psychobiological research starts from assumptions that we live in a world that is (a) mechanistic and physicalistic, i.e., gives priority to matter, (b) monistic, i.e., only one form of ultimate reality, (c) reductionistic, i.e., reducible to physical events, (d) empiricistic, i.e., observation and experimentation is necessary, and (e) methodologically behavioristic, i.e., the observable data consist of behavior, though the basic content is neurological process. Though these assumptions will be anathema to many, the possible benefits of this new approach to understanding human communication are immense.

Despite the promise of the new research, however, psychobiologists are aware of certain limitations. Even an enthusiastic neurologist such as Restak believes that the mysteries of the human brain can never be fully explained by scientists, that understanding will require approaches quite different from those used in other physical systems, and that the exact nature and time of consciousness is unknown. Put another way, despite the knowledge and sophisticated instrumentation of today, we still have no idea as to how the brain's neurology and function is translated into the personal subjective awareness called consciousness or soul (Uttal, 1978).

But this threat to traditional philosophy may be more apparent than real. According to a prominent neurologist:

> . . . once it's realized that internal mental processes exert control over individual and collective behavior, certain consequences inevitably follow. Subjective feelings, values and goals thus become the primary determinants of human action. . . . This places psychobiology in the unique position of bringing about unity between brain research and

> our highest humanistic and cultural aspirations. For the first time in history, the interest of science and the interest of the humanities coincide (Restak, 1979, p. 380).

It is conceivable that, through the unifying force of psychobiology, the interests of communication can be more harmonious with those of science and the humanities for the benefit of each.

Notes

[1] Research grants from the National Association of Broadcasters and the American Newspaper Publishers Association in 1981-82 have provided partial funding for some of the research on negative messages mentioned in the early part of the paper.

[2] Professor James E. Fletcher of the University of Georgia, an authority on physiological response and measurement, has provided some helpful comments on this and other parts of the paper. Regarding the concept of "message", he suggests that semantic meaning may not be so cogent a feature of a message as whether or not the message generates a response, since this requires the perceptual apparatus to "chunk" the message, avoiding endless discussions as to "whether 'I love you' is one, two, three, or more messages". A psychological dictionary defines message as that part of one person's behavior which is perceived by another as having implications or meaning for him.

[3] The term "motivation" is preferred to "motive", though both are used interchangeably in the paper for the above definition. In the past, motive strongly carried the meaning of a conscious factor, something of which one was aware; currently, motive has lost the connotation of that which can be known by the actor. To preserve a useful distinction, however, the term "conscious motive" should be employed for subjective and usually verbalized ascriptions of motivation, as distinct but not necessarily different from actual motivation.

[4] Professor Fletcher comments that the notion of arousal actually covers several different things, not all of them useful in the present discussion. This confusion and ambiguity can be resolved, he suggests, by "heightened capacity to respond" or "diminished capacity to respond", respectively, in place of high-arousal and low-arousal.

[5] Professor Fletcher offers another interesting hypothesis. The consumption of redundant messages--such as listening to the same tunes on a "Top-40" station over and over--seems to be self-rewarding. Against such a background of narcotic communication consumption, a greater level of negative message impact would be tolerable.

A prophetic hypothesis, since a recent investigation by the author ("Bad News on Radio") found that Top-40 stations did indeed carry more bad news than any other type of station in Knoxville.

[6] Fletcher adds another hypothesis. Alcoholism is related to "augmenting", the tendency to estimate the size of things to be consistently larger than they are. An augmenter should be better able to cope with negative information when under the influence of modest quantities of alcohol.

7 "Religiosity" is used here to mean enthusiasm, interest and zeal rather than level of participation in organized church activity.

8 "Intelligence" is defined here as that hypothetical construct of what is measured by standardized intelligence tests.

9 Professor Fletcher makes the point that when beta-wave activity increases, alpha-wave activity decreases, and vice-versa. Thus, alpha activity increases during the viewing of TV commercials. Self-selected exposure exposure to messages (e.g., magazine ads) leads to increased beta activity, while forced exposure or passive exposure(as in the case of many TV messages) leads to decreased beta.

10 Professor Fletcher comments that ERP's measure only the responses to discrete and almost instantaneous stimuli rather than the usual gestalt encountered with meaningful messages in context. Other measurement techniques may be necessary for the kinds of pre-testing hypothesized here. For"wave" throughout this discussion, read "brain response".

REFERENCES

ADELMAN, GEORGE. Psychology and Neuroscience: converging on the mind-body problem. Contemporary Psychology, 1979, 24, 449-451.

ANDERSON, P. A., GARRISON, J. P., & ANDERSON, J. F. Implications of a neurophysiological approach for the study of non-verbal communication. Human Communication Research, 1981, 6.

BERLYNE, D. E. Aesthetics and Psychobiology. New York: Appleton-Century-Crofts, 1971.

CAMPBELL, H. J. The Pleasure Areas: A New Theory of Behavior. New York: Delacorte Press, 1973.

ENGLISH, H. B., & ENGLISH, A. C. A Comprehensive Dictionary of Psychological and Psychoanalytical Terms. New York: Longmans Green, 1958.

EYSENCK, H. J. Personality and the law of effect. In D. E. Berlyne and K. B. Madsen (Eds.) Pleasure, Reward and Preference. New York: Academic Press, 1973a, 133-166.

EYSENCK, H. J. (Ed.) Handbook of Abnormal Psychology. San Diego: Robert R. Knapp, 1973b.

EYSENCK, H. J., & NIAS, D. K. B. Sex, Violence and the Media. New York: St. Martin's Press, 1978.

FLETCHER, JAMES E. Personal communication. December, 1981.

FURST, CHARLES. Automating attention. Psychology Today, 1979, 112.

HASKINS, JACK B. Cloud with a silver lining approach to violence news. Journalism Quarterly, 1973, 50, 549-552.

HASKINS, JACK B. The trouble with bad news. Newspaper Research Journal, 1981a, 2, 3-16.

HASKINS, JACK B. Paradoxes and quirks in human communications behavior and some explanatory theories. In J. McKerns (Ed.) Proceedings of the Fifth Annual Communication Research Symposium. Knoxville: University of Tennessee Communication Research Center, 1981b. (In press.)

HASKINS, JACK B. Hypernegativism in journalism: ten dimensions of the bad news problem. Unpublished paper, Communication Research Center, University of Tennessee, Knoxville, 1981c.

HASKINS, JACK B. Hypernegative communication systems and psychobiology: a general hypothesis, specific evidence and an explanatory theory. Unpublished paper, Communication Research Center, University of Tennessee, Knoxville, 1981d.

LILLY, JOHN C. The psychophysiological basis for two kinds of instincts: implications for psychoanalytical theory. Journal of the American Psychoanalytic Association, 1960, 8.

LONG, MARY. Ritual and deceit. Science Digest, 1980, 87-91, 121.

MacLEAN, PAUL D. Family feeling in the triune brain. Psychology Today, 1981, 100.

MATLIN, MARGARET W., & STANG, DAVID J. The Pollyanna Principle: Selectivity in Language, Thought and Memory. Cambridge, Mass.: Schekman Publishing Company, 1978.

RESTAK, RICHARD M. The Brain: The Last Frontier. Garden City: Doubleday, 1979.

ROGERS, EVERETT M. Importance of meta-research. International Communication Association News, 9, 6-7, 12.

ROPER ORGANIZATION, INC. Evolving Public Attitudes Toward Television and Other Mass Media, 1959-1980. New York: Television Information Office, 1981.

SELDEN, GARY. Machines that read minds. Science Digest, 1981, 89, 60-63, 112-114.

TIGER, LIONEL. Optimism: the Biology of Hope. New York: Simon & Schuster, 1979.

UTTAL, WILLIAM R. The Psychobiology of Mind. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1978.

WEINSTEIN, S., APPEL, V., & WEINSTEIN, C. Brain-activity responses to magainze and television advertising. Journal of Advertising Research, 1980, 20, 57-63.

WILSON, EDWARD. On Human Nature. Cambridge, Mass.: Harvard University Press, 1978.

WINDAHL, SVEN. Uses and gratifications at the crossroads. In G. C. Wilhoit and H. DeBock (Eds.) Mass Communication Review Yearbook, Volume 2. Beverly Hills: Sage, 1981, 174-185.

ZUCKERMAN, MARVIN. Sensation Seeking: Beyond the Optimal Level of Arousal. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979.